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Notes on some Florida Plants.

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The section of Florida visited by me, and where I spent some five or six months collecting the flora, had never before been systematically explored botanically. One or two parties had collected for a few weeks in the winter season, but no one had spent any great length of time, and so it was practically a virgin field for the botanist. Its flora is most interesting, both in new and rare forms. The northern and tropical vegetation seem to overlap here. *Ximenia Americana*, a common West Indian shrub, and *Mitchella repens*, our common partridge berry, which has a far northern range, were equally common. This is a fair example of the extreme diversity of the forms.

Eustis, a beautiful little town in the high pine land country, was the centre of my operations. This is situated on a lake of the same name, some six miles long and three miles wide, connected with Lakes Griffin and Harris by the Ocklawaha River. It is about 25 miles from the Gulf, an equal distance from the Atlantic, and some 160 miles south of Jacksonville. I confined my operations to a radius of 12 miles of this place.

Lake county, a small section of which I explored, is situated in Central Peninsular Florida, right in the heart of the lake region. It seemed strange at first to find in a country where the soil is practically nothing but sand, such a superabundance of lakes. They are everywhere. Five or six can be seen at once from the tops of

some of the slight elevations in the high pine land. They vary in size from only a few hundred feet to several miles. There are two groups of them: first, the large ones, which are really widenings of the Ocklawaha River, and second, the small, clear-water lakes. These latter are never very large, and the water contained in them is as clear as crystal. These are particularly numerous in the high pine land. They have no apparent inlet or outlet, and as a rule occur in deep depressions. How it is that the water remains so perfectly clear and limpid is hard to explain. Compared with our northern lakes, they contain little vegetation. *Potamogetons*, *Vallisneria*, and other forms so common in the lakes of the North, are entirely absent, and are to be found only in the Ocklawaha River and the large lakes alluded to above.

Another peculiarity about these clear-water lakes is their variation in elevation. The case of Lakes Alfred and Irma will illustrate this feature. They lie a little to the southeast of Eustis, and are only separated by a steep hillside some 500 or 600 feet long, Lake Imra being at the top of the hill. The difference in elevation is about 65 feet. One or two small streams, rising in this hillside, flow into Lake Alfred. But in spite of this its waters gradually lowered during the entire summer, and when I left in September the lake was nearly dry. The waters of Lake Irma, on the contrary, remained at the same level, although it is considerably higher and would be expected to drain into Lake Alfred.

As stated before, the flora of this section is very rich, and this fact is due to the exceeding variation in the physical features of the surrounding country. There are five well-marked areas, the flora of each one being different, and having certain plants peculiar to itself. These might be designated as: High Pine Land, "Scrub," Low Pine Land, "Bayheads" and "Hammocks."

Of these the high pine land is the greatest in extent. The tall timber is composed entirely of the long-leaved or yellow pine, *Pinus palustris*. The trees have perfectly straight trunks, rising to a height of 50 to 75 feet, the branches all being borne near the top, leaving the trunks entirely naked. The two other prevailing trees are *Quercus Catesbaei* and *Q. cinerea*, the shining bright green deeply cut leaves of the former making a strong contrast to the narrow entire and grayish-green foliage of *Q. cinerea*. The

Leguminosae are well represented, and in fact the members of this family predominate among the herbaceous plants. *Chapmania Floridana, Aeschynomene hispidula, Morongia angustata, Rhynchosia cinerea, Crotalaria Purshii, Cracca ambigua* and *C. chrysophylla* are the ones met with everywhere. Among the more frequent of the Compositae are *Berlandiera subacaulis, Pterocaulon undulatum, Cnicus spinosissimus Elliottii, Lygodesmia aphylla, Vernonia angustifolia, Hieracium megacephalon, Helianthella grandiflora* and *Liatris secunda.* Among other plants characteristic of this region are: *Tradescantia rosea, Asclepias amplexicaulis, Asimina pygmaea, Commelina angustifolia, Polanisia tenuifolia, Breweria angustifolia, Stillingia sylvatica, Croton argyranthemus, Jatropha stimulosa, Eriogonum longifolium* and *E. tomentosum, Portulaca pilosa, Ceanothus microphyllus* and *Piriqueta Caroliniana.* The grasses are represented by few species, but these occur in great numbers. *Aristida stricta, Sporobolus juncea, Andropogon argyraeus* and *A. longiberbis* are the commonest. There is only one member of the Cyperaceae that occurs in any quantity and that is *Stenophyllus Warei.*

The high pine land is subject to annual fires. The cattle growers burn off the old grass, so that the roots will start up and give a crop of young, succulent shoots. It is wonderful what a variety of features protect the plants against these destructive fires. *Pinus palustris* has a very thick bark at the base of the trunk, and the thickening is very noticeable in the shape of a sudden swelling just above the ground. All the herbaceous plants have large underground parts, tubers or thick roots, which store up nutriment and protect them. *Commelina angustifolia* has an immense fascicle of fleshy horizontally spreading roots, which anchor the plant deep in the ground and keep its soft, tender parts out of harm's way. *Tradescantia rosea* has a similar arrangement. The provision for the preservation of *Helianthella grandiflora* from extinction is even more noticeable. Buried in the ground, 6 or 8 inches deep, is an oblong tuber; the stem arising from this, instead of pushing abruptly upwards, continues horizontally, sometimes for a distance of 12 or 18 inches, and then rises obliquely to the surface; no matter how much the fire may damage the aerial portions, the plant has a supply of nu-

triment, enough to enable it to start up again at once. The above are only a few instances of the many means which insure the preservation of the different species.

The "scrub" flora is entirely different from that of the high pine land, hardly a single plant being common to both; in fact these two floras are natural enemies and appear to be constantly fighting each other. The only large tree growing in this region is *Pinus clausa*, which is markedly different from *P. palustris*, the pine of the high pine land. The latter is a tall, straight tree, with the branches restricted entirely to the top. *P. clausa*, on the contrary, is branched almost from the very base and does not attain a height of over 30 feet. Its needles are very fine, and it has received the name of the "spruce pine." The great part of the growth in the "scrub" is made up of scrub oaks, which are so variable that no two of them seem to be alike, and how many species there may be would be hard to tell. Only a number of years of close study in the field could determine this. *Ceratiola*, with its heath-like leaves, occurs here very abundantly. *Persea humilis*, a most beautiful little shrub, makes itself very conspicuous by its bright brown silky pubescence, which is noticeable a long way off. *Bumelia lanuginosa* is very common, as is *Ximenia Americana*. *Smilax Beyrichii* climbs all over the scrub oaks, and is the only one of this genus observed growing in the "scrub." One of the most beautiful plants of this part of Florida is *Brewerria grandiflora*, with its large, bright blue flowers. The stems, with their peculiar gray-green erect leaves, spread out in all directions over the white sand. I remember one place, several acres in extent, where this plant reached its perfection, the stems sometimes eight or nine feet long, fairly covering the ground in all directions, with hundreds of the flowers in sight. It is remarkable that a plant of such luxuriance and beauty can thrive in an area so devoid of moisture as the "scrub," and yet it selects and confines itself exclusively to this region. Only one species of Cyperaceae is to be found here. This is *Rynchospora dodecandra*, and is quite common. Grasses there are absolutely none. For some reason this family is unable to obtain a foothold. Occasionally some member of the Andropogoneae tries it, but soon dies, not being able to stand the opposition it meets with for more than a few months.

I spoke above of the antagonism of these two floras. This is so marked that there is no mistaking it. Wherever they come together the line of division is very distinct. A bare space of pure white sand usually separates the two. On one side you will see the tall *Pinus palustris* as far as the eye can reach, and on the other the diffusely branched *P. clausa* of much lower stature. You may look in vain in the "scrub" for plants occuring in abundance just over the line in the high pine land, and *vice versa*. The strip of bare white sand dividing the two is neutral ground, and each seems to jealously guard against the other's gaining a foothold there. The soil of these two sections was apparently originally the same pure white sand. That in the high pine land is now darker in color, being probably due to the charcoal deposited there by the annual fires. This seems to be the only difference. As fires are of rare occurrence in the "scrub," the plants have made no provision against it, and so when a fire does go through it causes great havoc, almost entirely killing the pines and oaks. It is fortunate that fires are of such rare occurrence.

The flora of the low pine land region is not so distinct. It grades into that of the high pine land. Each has its separate and peculiar plants, but the line of demarcation is not so evident. *Pinus serotina* and *P. heterophylla* are the prevailing trees. Some of the plants which are peculiar to and characteristic of this region are: *Podostigma pedicellata*, *Trilisa odoratissima*, *Solidago Chapmani*, *Bejaria racemosa*, *Cracca hispidula* and *C. spicata*, *Eryngium yuccaefolium synchaetum*, *Rhexia ciliosa* and *R. serrulata*, *Bletia verecunda*, *Limodorum parviflorum* and *Juncus marginatus pinetorum*. The commonest member of the Cyperaceae is *Fimbristylis puberula*, which occurs in great abundance throughout the low pine land. *Aristida stricta* also occurs here, as well as in the high pine land. *Andropogon Floridanus* is quite common and a very showy member of that genus.

The low pine land occupies an intermediate position between the high pine land and the flatwoods. The latter is not represented near Eustis, and so I did not get a chance to do any collecting among that flora, which differs in a marked degree from that of any other section.

The large swamps, lying generally along the low pine land,

have a peculiar flora and one quite interesting. These are locally known as "bayheads," so called, I presume, from the large number of bay trees, *Magnolia Virginiana*, that occur in them. The shrubs most prominent are *Pieris nitida* and *Leucothoë racemosa*. *Gordonia Lasianthus*, with its large white showy flowers, occurs in quantity along the margins. It ranges in height from ten to thirty feet, and when in full bloom is a very pretty sight. The plant most common, and which attracts the eye above all others, is the ever prevailing *Smilax laurifolia*. It climbs and clambers over all the shrubs and bushes, and makes the "bayheads" almost impenetrable. Here and there open places will be found where sphagnum grows in quantity, and in such spots one is almost sure to find *Utricularia fibrosa*, with its large showy yellow flowers. And in the very wet places *Peltandra sagittaefolia* makes itself conspicuous by its showy ivory-white spathes. *Andropogon brachystachys* occurs in the vicinity of "bayheads" and I found it no where else.

The soil of all the above, excepting the "bayheads," is pure sand, overlying a stratum of clay, the depth of sand varying from a few feet in the low pine land to as much as fifty feet in the high pine land. In places the clay comes to the top, and the character of the vegetation entirely changes. This forms what is locally known as "hammock land." It is a heavy clay soil, and is generally subjected to continuous inundation during the rainy season, which lasts from about June to September. *Quercus virens*, the live oak, is the principal tree, and often attains a great height. The most conspicuous object to the eye of a northerner is certainly the Cabbage Palmetto, *Sabal Palmetto*. It rises to a height of 50 to 75 feet, overtopping all the other vegetation. These trees are very plentiful and can be found in all stages of growth, from the young plant only a few feet high to the tall ones just alluded to. Until they attain a considerable size they retain the bases of the petioles of the old leaves. This gives the young palms a different appearance from the one they assume later when they shed these, exposing the slim symmetrical trunk to view. So unlike do they seem that at first sight it is hardly possible to believe that they can be the same in different stages of growth. In some sections the Golden Fern, *Polypodium aureum*, as well as the Old Man's Beard,

Vittaria lineata, take possession of the trunks of the young palmettos, thrusting their roots down between the sheaths and the trunk. A palmetto thus adorned is certainly a beautiful object.

The blue palmetto, *Sabal Adansonii*, also occurs in the "hammocks." It never attains a height of more than three or four feet. Among the other plants restricted to the hammock lands are: *Tradescantia pilosa*, *Coreopsis Leavenworthii*, *Solidago Leavenworthii*, *Helenium nudiflorum*, *Teucrium Nashii*, *Berchemia scandens*, *Cardiospermum microcarpum*, *Eryngium Baldwinii*, *Ulmus Floridana* and *U. alata*, *Celtis Mississippiensis* and *Capsicum baccatum*.

Owing to this exceeding variation in the physical conditions of the country explored, I was enabled to secure a large number of species, some 800, several of them being new to science and others additions to the flora of the United States. The range of several plants was extended much further south. I also secured a number of rare things hitherto poorly represented in herbaria. The following are some of those of peculiar interest:

1153, 1180. CASTALIA RENIFORMIS (Walt). [*Nymphaea reniformis* Walt.]

This was found growing commonly in Lake Ella. There seem to be two forms of it, one growing along the shore, the other in water 10 to 20 feet deep. The two merged into each other, and a careful comparison showed them to be the same. The rootstocks of the shore form were secured and there was no indication of any tubers. The leaves varied from 6 to 8 inches in diameter in the shore form, to nearly 2 feet in the one growing in deep water. The edges of the latter were distinctly turned up, much as in the *Victoria Amazonica* and occurred in large masses, making it difficult to propel a boat through them. The flowers were long and entirely without odor, with the exception of a faint suggestion of that given off by apples.

815. HELIANTHEMUM NASHI Britton, n. sp.

Diffusely branched from a thick woody, horizontal root, the branches decumbent or ascending, slender, terete, densely stellate-tomentose even when old, leafy, 2–4 dm. long. Leaves oblong or linear-oblong, densely stellate-canescent on both sides, acute at both ends or the lower obtuse at the apex, 1.5–3 cm. long, 3–6 mm. wide, short-petioled, the margins somewhat revolute; flowers all alike in terminal leafy-bracted thyrsi; pedicels 2–5 mm.

long, divergent and ascending; outer sepals subulate; inner sepals oval-oblong, very obtuse, firm, concave, 3–4 mm. long; petals yellow, broadly cuneate, slightly eroded, 5 mm. long; stamens about 15, shorter than the petals; ovary globose, puberulent.

Nearest to *H. arenicola* Chapm., but very different in its thyrsoid, not corymbose, inflorescense, and obtuse inner sepals. It occurs in the "scrub."

14. STIPULICIDA FILIFORMIS n. sp.

A diffusely branched glabrous annual, of very slender habit, 1–2 dm. high. Radical leaves orbicular, acute, about 4 mm. in diameter, on slender petioles 5–7 mm. long; bracts triangular-subulate, about 1 mm. long; inflorescence capitate, 1–2-flowered; flowers about 1.5 mm. long, sessile or slightly stalked; sepals 5, scarious-margined, oval, obtuse, the inner 1.5 mm. long, 1 mm. broad, outer about two-thirds as long; petals 5, oblong, 2 mm. long, .75 mm. broad, entire or somewhat eroded at apex, minutely 3–5-toothed on each side near the base; stamens 3, opposite inner sepals; filaments linear, .75 mm. long, .25 mm. broad; anthers oval, .5 mm. long, .3 mm. wide; capsule globose, obscurely 3-angled; seeds more or less triangular in outline, flattened, less than .5 mm. long.

Differs from *S. setacea* in being much more slender; in the inflorescence, which is composed of fewer and sessile flowers, and in the shorter bracts.

One of the few plants that grow in both the "scrub" and high pine land. It prefers the latter, and attains a much more luxuriant growth there. Begins to flower in March and continues throughout the summer.

755. *Hypericum aspalathoides* Willd.

This has been considered as a variety of *H. fascicularis*. The two occur very commonly around Eustis and are clearly distinct species. The latter is found invariably around the lake shores and grows from 4 to 12 feet high, sometimes forming a small tree with a trunk 2 to 3 inches in diameter. The leaves are long and it flowers about the middle of April, maturing its fruit early in August. *H. aspalathoides* never occurs along the lake shores, but in the low pine land. It is a small undershrub, 1 to 3 feet high, has much shorter leaves, does not flower until five or six weeks later, and matures its fruit sometime in September.

673. *Hibiscus incanus* Wendl.

This has been put in with *H. Moscheutos* but it certainly appears distinct from that plant. Its flowers are always pure white with a deep purple centre. The leaves are softly pubescent on both sides, and are very seldom lobed at the apex, and when they are the lobing it is very slight.

378. *Cardiospermun microcarpum* Kunth.

Of frequent occurrence in the "hammock lands," climbing up the bushes and small shrubs. It appears to be new to the flora of the United States. It occurs in the West Indies, and so its turning up in Florida is not a matter of great surprise. It has much smaller fruit than *C. Halicacabum* L., which is very common in South Florida.

261. *Amorpha virgata* Small.

Mr. Small found this on Stone Mountain, Georgia, and it has now been found in Florida, several hundred miles further south.

1523. KUHNISTERA FEAYI (Chapm.) (*Fetalostemon Feayi* Chapm.).

This occurs very commonly in both the "scrub" and high pine land. It forms large clumps 3 to 4 feet across. The flowers are a bright lavender. A white-flowered form was also found (No. 1524).

1336. RHYNCHOSIA CINEREA n. sp.

Perennial. Stems numerous, trailing, branching, 6–10 dm. long, 3-angled, striate, clothed with appressed cinereous pubescence; stipules brown, ovate, acuminate, 3–4 mm. long; leaves from 3–5 cm. long, 3-foliolate, terminal leaflet largest; petiole 11–20 mm. long, rachis 5–9 mm; leaflets appressed-pubescent above and on the veins beneath, somewhat rugose; lateral ones unequally ovate or orbicular-ovate, 13–23 mm. long, 9–18 mm. wide; terminal leaflet larger, orbicular-ovate to depressed-orbicular, 15–26 mm. long, 13–30 mm. wide; petiolules about 1 mm., covered with a dense cinereous, appressed pubescence; flower-clusters about as long as petiole; peduncle 3–5-flowered; pedicels slender, 1–3 cm. long; calyx somewhat 2-lipped; lower lip 3-parted, divisions lanceolate, acuminate, middle one 13 mm. long, a little exceeding the lateral ones; upper lip 2-cleft, teeth acuminate; ovary pubescent; pod oblong, obliquely acute at apex, 16 mm. long, 8 mm. broad, appressed-pubescent, 2-seeded; seed orbicular, flattened, 5 mm. in diameter, mottled brown.

Nearest to *R. tomentosa* Ell., which has a climbing habit, larger

leaflets, a yellowish brown spreading pubescence, and the young pod densely pubescent, almost villous. In *R. cinerea* the pod is sparingly appressed-pubescent. Grows only in the high pine land region.

70. *Rubus cuneifolius* Pursh.?

There is some doubt as to this being this species, but more material is needed to decide the matter. It grows strictly erect and is armed with most aggressive spines. The leaves are much larger and the pubescence seems to differ. There is a specimen in the Columbia College Herbarium collected by Mr. A. H. Curtiss, No. 791, which appears to be the same thing.

1142. CRATAEGUS FLAVA INTEGRA n. var.

A small tree 4–5 metres high with spreading branches. Bark light gray, on new shoots reddish-brown; leaves obovate, more or less undulate especially at the apex, glandular on the margin, acuminate at base and narrowed into a slender glandular petiole, 10–13 mm. long. Fruit (not fully ripe) globose, on villous pedicels, 5–15 mm. long.

Collected in vicinity of Lake Ella in old fields, July 2. The fruit was green though apparently full grown. The flowers were not seen.

948. *Drosera capillaris* Poir.

This plant occurs in great abundance along the shores of the clear-water lakes, and seems to be confined to them. It never grows more than 2 or 3 inches high. There is another form which is also quite common, but it is much taller.

1218. RHEXIA FLORIDANA n. sp.

Whole plant of a dark olive green, diffusely branched from a woody base, 2–4 dm. high, branches ascending. Pubescence glandular-hirsute, spreading; leaves linear, 1.5–4 cm. long, 1–3 mm. wide, smooth on both sides, one-nerved, remotely and sharply spinulose-serrulate, acute, sessile, narrowed at base; flowers short-pediceled; calyx-tube cylindric-campanulate, sparingly glandular-hirsute, about 1 cm. long; lobes triangular to ovate-lanceolate, about 2 mm. long, 1 mm. broad at base; petals purple, mucronate, mucro about 1 mm. long; fruiting calyx 13 mm. long, neck 6 mm. long, 3 mm. in diameter, globose portion about 6.5 mm. in diameter; seeds snail-shaped, .6–.75 mm. long, irregularly ridged.

Very distinct and well marked. Its dark color and very nar-

row leaves readily distinguish it from all the other forms of this genus.

Found growing in quantity in wet clay soil on east bank of canal leading from Hicks' Prairie, near Eustis. Collected early in July.

515. *Œnothera sinuata* L. (?)

The stems of this plant are prostrate and 3 or 4 feet long, with leaves nearly entire or but slightly toothed. It appears quite different from the true plant, which is very common about Eustis.

865. *Melothria pendula* L. (?)

There are two forms of this occurring commonly. One, the ordinary plant, climbs over the bushes and tall weeds, and has thin sharply angled leaves with a broad open sinus at base. The other is always prostrate, and has thicker and more obtusely lobed leaves, with the sinus at base almost closed.

377. *Sambucus Canadensis* L.

This often attains a height of 10 to 15 feet, with a trunk 6 to 8 inches in diameter. Its leaves are very dark green and shining above, with long acumination.

892. *Cephalanthus occidentalis* L.

In the cypress swamps this often reaches a height of 30 feet, with a trunk 5 to 6 inches in diameter. The leaves are also correspondingly large, some of those measured being over 17 inches long.

730. *Richardia Brasiliensis* Gomez.

This appears to be new to the United States. It is evidently introduced, as it occurred only in one place along the railroad track, but it appeared at home and well established.

729, 1346. *Diodia hirsuta* Pursh.

Why this plant should have been put in with *D. Virginiana* is hard to understand. The mistake would certainly not have been made had the two been seen growing. They are entirely different. The latter is a glabrous plant with large thick leaves. *D. hirsuta* is very hairy with much smaller leaves and larger fruit. It occurs in dry sandy soil or in open swamps. In the former situation the stems are prostrate, forming mats on the ground.

In the latter they are only decumbent at base, being erect for the last 10 or 12 inches.

1183. *Garberia fruticosa* A. Gray.

Only a few specimens of this very rare shrub were secured. The plant seemed to be very common, but the flowers were scarce. It probably blooms much later. The shrub is some 4 or 5 feet high.

691. *Solidago Leavenworthii* T. & G.

This rare golden-rod is by no means common. It occurred in only one or two places.

1225. *Helianthella grandiflora* A. Gray.

The tubers of this showy composite exude a copious resinous matter.

1711. *Liatris secunda* Ell.

This is the *L. pauciflora* of the Synoptical Flora where the above name is cited as a synonym. It is clearly not the plant Pursh had in view; he divides the genus into two sections, tuberous and non-tuberous. The first contains the species now placed in *Liatris*, the second is composed of a number of plants, part of which are now put in *Carphephorus*, the others in *Trilisa*. *L. pauciflora* occurs in this latter group. The description given of it is clearly not that of a *Liatris*, as now understood.

390. HIERACIUM MEGACEPHALON n. sp.

Annual, whole plant generally of a purplish hue, stems 3–5 dm. high, channeled, strongly pilose especially at the base. Radical leaves broadly oblanceolate, 8–12 cm. long, 2–3 cm. wide, denticulate, pilose, particularly on the upper surface and the midrib beneath; cauline leaves oblong to oblong-ovate, decreasing in size towards the inflorescense, lower 4–6 cm. long, 1.5–2 cm. broad, truncate at base, sessile; inflorescence corymbose-paniculate, densely glandular-pubescent; involucre 8–10 mm. long; achenes fusiform.

Grows only in the high pine land. Flowers from March–May.

This seems to belong near *H. Gronovii*, and the achene certainly places it near that species. Its inflorescence, large heads, and dense glandular-pubescence clearly separate it from that plant. Moreover, *H. Gronovii* does not begin to flower in

Eustis until late in August, whereas this plant flowers early in the spring.

700. XOLISMA FRUTICOSA (Michx.)

(*Andromeda ferruginea fruticosa* Michx.) This certainly is specifically distinct from *Xolisma ferruginea*, which grows from 6–12 feet high, has light green leaves which are very much rolled in on the margins, and flowers early in March. *X. fruticosa* never attains a height of more than 6 feet, has a much stricter habit, very dark leaves which are not revolute, and does not flower until two months later. This difference is quite marked in herbarium specimens, but in the field there can be no mistaking it.

573. *Vaccinium stamineum* L.?

This occurs in very dry sandy soil, and has much smaller leaves than usual. They are thick, somewhat rugose and of a light green color. The true plant occurs in similar situations, but is much larger and thinner leaved.

941, 1698. *Fraxinus epiptera*, Michx.

In the herbarium of Columbia College there are two things placed under *F. platycarpa*. One of these has fruit over half an inch wide, elliptical in outline, gradually narrowed at each end. The other has linear-oblong fruit. This latter I found in quantity in the cypress swamps and it is evidently distinct from the broad-fruited form. Its leaves are thicker and entire, or occasionally with very obscure serration. It grows from 20–50 feet high and fits very well the description of the *F. epiptera* of Michx., and I have called it that. The broad-fruited one is *F. platycarpa*.

796. *Asclepias Feayi* Chapm.

This was obtained in but one place, in the low pine land. Its pure white flowers, large in proportion to the size of the plant, make it very conspicuous.

419. *Asclepias decumbens* L.

This is very common in the high pine land country. Although it is hard to detect any difference between the flowers of this species and *A. tuberosa*, in the fruit the characters seem to be good. The latter has a pod about 3 inches long and ¾ of an inch wide, while in *A. decumbens* the pod is considerably longer than

this and hardly ½ an inch broad. The relative difference between length and breadth is very marked.

1092. ASCLEPIAS ACERATOIDES n. sp.

Perennial. Stems decumbent or erect, dark purple, simple or branched, terete, striate and puberulent; leaves smooth on both sides, those of the stem nearly orbicular or very broadly oblong, about 5 cm. long, 3.5–4 cm. broad, emarginate, rounded at base, on petioles about 8 mm. long; those of the branches oblong, 3–3.5 cm. long, 1–2 cm. broad, apiculate, more or less acute at base, on petioles 2–4 mm. long; umbels borne in the axils of the upper leaves, 20–50-flowered; peduncles puberulent, 2–3 cm. long; pedicels slender, puberulent, about 1.5 cm. long; sepals greenish, lanceolate, reflexed, acute, 2.5 cm. long; petals greenish, oblong-lanceolate, reflexed, obtuse, 6 mm. long, 2 mm. wide; lobes of the crown white with a greenish keel, flattened, semi-lanceolate, 5 mm. long, acute at each end, short-stalked; horn protruding from the middle of the lobe, horizontal, resting on the column, tip more or less ascending; column sessile, 2 mm. high; pod erect or ascending, puberulent, lanceolate, obtusely acuminate, about 8 cm. long, 1.5 cm. wide, on a twisted and reflexed thickened pedicel.

This plant very much resembles an *Acerates*. It grows exclusively in the "scrub," flowering late in June and through July.

1715. *Hydrolea corymbosa* Ell.

Occurs in swamps and is very scarce. I searched for it carefully, but failed to secure more than a few specimens. It grows in the tall grass and might be easily overlooked.

609. *Convolvulus repens* L.?

This differs from the ordinary plant in having pure white flowers, the lobes of the leaves decidedly divaricate-spreading, the pubescence stronger, and in a distinct climbing habit. It may be only an extreme form.

770. BREWERIA VILLOSA n. sp.

Whole plant villous-pubescent. Stems several from a perennial root, simple or much branched, trailing; leaves oblong to oblong-ovate, 2.5–7 cm. long, 7–20 mm. broad, obtuse, apiculate, rounded at base, on petioles 2–8 mm. long; peduncles equalling or exceeding the leaves, 1–7-flowered; bracts shorter than the pedicels; sepals oblong to ovate-lanceolate, 8–11 mm. long, 3–4 mm. broad, acuminate, villous; corolla 1.5–2 cm. long, white; filaments filiform-subulate, two-thirds as long as corolla, adnate and villous for two-fifths their length, lower part of free portion

pubescent; anthers 1.5 mm. long; ovary villous, 2-celled; cells 2-ovuled; styles 2, adhering for one-third their length; capsules on erect pedicels, ovate, villous at apex, 2-celled, cells 1-seeded; seeds yellowish brown, ovate, compressed, flat on one side, 5 mm. long, 3 mm. broad.

Found in low lying oak land in the vicinity of water. Nearest to *B. aquatica* but readily distinguished by its larger white corolla, villous filaments and adhering styles.

Nos. 771 and 1508 appear to be the same. They have larger and thinner leaves and are not so villous. They grew in more shaded situations, and this probably accounts for the variation in the leaves and pubescence. In No. 770 the peduncles almost invariably exceed the leaves and are many flowered. In Nos. 771 and 1508 the leaves and peduncles are nearly equal, and the latter often only 1-flowered.

971. BREWERIA ANGUSTIFOLIA n. sp.

Stems numerous, from a perennial root, trailing, slender, 8–10 dm. long, more or less depressed-pubescent. Leaves narrowly linear, 2.5–7 cm. long, 1.5–3.5 mm. broad, glabrous or pubescent, acute, sessile or on petioles not exceeding 2 mm. in length; peduncles slender, 1-flowered, about equaling the leaves, appressed-pubescent; bracts shorter than the pedicels; sepals elliptical to oblong, acute, smooth, ciliate, 7–10 mm. long, 2.5–3 mm. broad; corolla white, about 2 cm. long; filaments villous with jointed hairs, about one-half as long as coralla, adnate for one-third their length; styles 2, three-fourths as long as coralla, adnate for one-third their length; ovary villous at apex; capsules 8 mm. long, on recurved pedicels, oval, acute, with a tuft of hairs at the apex, 2-celled, cells 1-seeded.

Grows only in the high pine land region, where it is very abundant. It has been confused with *B. humistrata* and *B. Pickeringii*, from both of which it is evidently distinct. It differs from the former in its larger flowers, very narrow leaves, invariably 1-flowered peduncles, and 2-seeded capsule. From the latter it can be separated by its much shorter bracts, villous filaments, styles adnate for a much shorter distance, and like the stamens, included.

1299. *Utricularia resupinata* B. D. Greene.

Occurs very plentifully along the shores of several of the clear-water lakes. A few specimens of it were secured by Dr.

Garber and Dr. Porter was the first to note the extension of its range into Florida. It seems to have been reported from no intermediate stations.

248. *Utricularia oligosperma* St. Hil.

This is the largest of its genus occurring in Florida. It is found in both the rivers and lakes, and is quite common. It reaches its perfection in Lake Ella, where the stems often attain a length of 6 to 8 feet and the branches spread 2 to 3 feet. The growing end is of a beautiful pink color, the middle portion a dark green, and the decaying end a rich brown. It is entirely floating, forming a beautiful object spread out in the water, and looks like a large sea-weed. Its flowers are an inch in diameter and yellow. It is found in South America, and the extension of the range to central Florida, where it is evidently indigenous, is remarkable. On a specimen of a *Utricularia* in the Columbia College Herbarium, collected by Dr. Chapman, is a note to the effect that the plant appeared in the bay at Apalachicola in 1842, but entirely disappeared in a short time. This specimen proves to be this same thing.

974. *Boerhaavia decumbens* Vahl.

This plant was very plentiful, much more common than the other species growing with it, *B. erecta*. It always occurred in cultivated ground or its vicinity and may be introduced. I cannot find that it has been reported from the United States before.

1185. *Paronychia herniariodes* (Michx.) Nutt.

This rare plant was found growing quite freely in one locality near Tavares. It occurred in dry sandy soil just west of the railroad bridge crossing the Ocklawaha River. It had been previously known only from Georgia and North Carolina.

435. *Persea pubescens* (Pursh) Sargent.

Dr. Chapman published this as a variety of *P. Carolinensis*. It has several well-marked characters which seem sufficient to justify its elevation to specific rank. In *P. Borbonia* (L.) Spreng. (*P. Carolinensis* Nees) the leaves and inflorescence are glabrous, the peduncles equaling or shorter than the petioles, and fruit fully a half inch in diameter. In *P. pubescens* the leaves and inflorescence are strongly pubescent, the peduncles generally much exceed

the petioles, and the fruit is but little more than half as large, of a light blue color.

574. PERSEA HUMILIS n. sp.

A compact shrub, 2–3 metres high, with branchlets, young leaves, and whole inflorescence covered with a dense bright brown sericeous pubescence. Branches dark slate-color; leaves from elliptical to oblong, 4.5–8.5 cm. long, 2–3 cm. wide, more or less revolute on the margins, acuminate at both ends, obtuse at apex, yellowish green, smooth and slightly shining above, blackish and pubescent beneath, the midrib very prominent; petioles from 1–2 cm. long; inflorescence capitate; peduncles stout, 4–7 mm. long, generally 3-flowered; flowers about 6 mm. long; sepals erect, obtuse, outer ones oval, 2 mm. long, shorter than the stamens, inner oblong, 5 mm. long, exceeding the stamens; fruit purplish black with a bloom, globose, 15 mm. in diameter, on peduncles about 15 mm. long; seed globose, 11 mm. in diameter.

This seems to be nearest to *P. Borbonia* (L.) Spreng. It differs in its smaller size, shorter, stouter and fewer-flowered peduncles which elongate in fruit; and especially in the dense brown sericeous pubescence of the young leaves and branchlets. This latter feature makes the shrub very conspicuous, and seems to be unusual in the genus. This, moreover, flowers some five weeks later than *P. Borbonia*.

Occurs exclusively in the "scrub," where it is very common. Collected at Eustis in flower in May. Fruit kindly collected on November 8th at the same place and sent to me by Mr. W. T. Swingle.

1397a. CROTONOPSIS SPINOSA n. sp.

An erect much branched annual, 4–7 dm. high, clothed with stellate-pubescence. Branches erect; leaves linear to linear-oblong, 1.5–3 cm. long, 2–5 mm. broad, acute at both ends, on petioles 1–2 mm. long; fruit spiny; seeds ovoid to ellipsoid, only slightly flattened, 2 mm. long, 1.5 mm. broad, minutely pitted.

Differs from *C. linearis* in having a more strict habit, smaller and much less flattened seeds, narrower leaves, and fruit covered with spines.

Collected by Mr. W. T. Swingle at Dunellon, July 24.

1700. *Habenaria blephariglottis* (Willd.) Torr.

Evidently an abnormal form of this plant. Its parts are nearly

twice as large as usual. Some of the flowers are slightly tinged with orange.

6. LIMODORUM PARVIFLORUM (Lindl.) (*Calopogon parviflorus* Lindl.)

Quite common in the low pine land. It grows from 6 to 12 inches high. Its flowers are deep purple, much resembling those of *L. tuberosum* of the north, which is also common, but flowers much later. *L. parviflorum* was in full bloom early in March.

557. STENORRHYNCHUS JALISCANA (Watson.) (*Spiranthes Jaliscana* Watson.)

Finding this plant in Florida was a surprise. It was previously known only from Mexico.

857, 1703. *Tillandsia juncea* Le Conte.

This has been placed with *T. setacea* Sw. by Mr. Baker, in his monograph of the Bromeliaceae. The two are very common where I collected and are clearly distinct. *T. setacea* has erect setaceous leaves, very narrow at the base while in *T. juncea* the leaves are much stouter, with a much broader base, and are conspicuously recurved. The specimens in the Columbia College herbarium collected by Dr. Chapman and so named are evidently another species, the *T. Balbisiana* R. & S. Le Conte says [Ann. Lyc. N. Y. 2: 131 (1828)] that his species very much resembles the figure of *Bonapartea juncea* in Flora Peruviana, *pl. 262*. The plant referred to above certainly does bear a strong resemblance to this figure.

1562. *Yucca filamentosa* L. var.

There are two forms of *Y. filamentosa* occurring in this region One flowers in May, has conspicuously twisted leaves which generally are strongly recurved and rather short, and matures its fruit in July. The other is taller, has whiter flowers in a larger panicle, longer and more erect leaves which are narrower in proportion, and does not flower until August. They grow in similar situations. With these differences it hardly seems possible that they can be the same.

459. NOLINA BRITTONIANA n. sp.

Roots a cluster of long spreading fleshy fibres. Radical leaves 40–70, recurved and prostrate, forming a dense mass around the base of the plant, linear, 1–2 metres long, 5–10 mm. wide, strongly scabrous on the margins, attentuated into a long slender

point; cauline leaves setaceous, 1–3 dm. long, about 1 cm. broad at base; stem arising from a bulbous base, 1–2 metres high; inflorescence paniculate, ovoid to oblong in outline, 3–4 dm. long; flowers in clusters of 2 or 3 on erect pedicels 3–5 mm. long; perianth segments elliptical to elliptical-ovate, 4 mm. long, 2 mm. wide, glandular at apex; filaments flat, broadly subulate, 2 mm. long, .5 mm. broad; anthers 1.5 mm. long; cells oblong, .75 mm. broad; ovary 3-celled, orbicular-ovoid, truncate, somewhat triquetrous; stigmas sessile; capsule orbicular, on slender recurved pedicels about 1 cm. in length, 8–9 mm. long, 10 mm. broad, cordate, retuse, triquetrous, 2 of the cells 1-seeded, the other generally empty.

Grows in dry, sandy soil in the high pine land region. Sometimes five or six plants occur together, and then it makes a very showy appearance in flower.

This plant is named in honor of Dr. N. L. Britton who has given me much help and advice in working up my collections, and to whom I wish to extend my thanks for his many kindnesses.

1389. *Xyris platylepis* Chapm.

This is found in the low pine land region and occurs with either white or yellow flowers (No. 1377.), the former by far the more frequent.

954. *Xyris torta* Sm.

This is the commonest species, inhabiting the low pine land. It invariably has white flowers, a fact which does not seem to have been noted before.

1584. Xyris Smalliana n. sp.

Plant smooth, glabrous and shining throughout. Leaves about one-half as long as scape, linear, 3.5–6 dm. long, 3–9 mm. wide, striate, the lower half purple; sheath from 2.5–4 dm. long, striate, with a blade from 1–10 cm. long; scape erect, scarcely striate, 7–10 dm. tall, nearly terete, 1-edged throughout, flattened and 2-edged just below the head, one edge being much more prominent; heads ellipsoidal, about 2 cm. long, 1 cm. in diameter when mature, ovoid in the early flowering state; scales orbicular-obovate, entire, 5–6 mm. long, 3–5 mm. wide; lateral sepals conspicuously exserted, 8 mm. long, 1 mm. wide, curved, wing gradually broadening to the top where it is from one-half to two-thirds as wide as the sepal, lacerate-fimbriate for the upper third; petals yellow; capsule obovoid, obscurely triquetrous, placentae parietal; seeds from cylindric-oblong to cylindric-obovoid, more or less curved, pointed at both ends, striate, about .6 mm. long, .2 mm. wide.

Growing in shallow water at Lake Ella and in very wet soil along edge of cypress swamp north of Trout Lake, near Eustis. No. 539. *X. torta* and *X. fimbriata* are the only other species in the United States with exserted sepals, the former with white petals.

1525. COMMELINA SWINGLEANA n. sp.

Stems 1–3 dm. high, smooth, sparingly branched, prostrate or ascending, from a compact fascicle of descending fleshy roots 3–5 cm. long; sheaths inflated, 6–9 mm. long; leaves linear to linear-lanceolate, 4–6 cm. long, 5–7 mm. wide, glabrous or slightly pubescent; peduncles about 5 mm. long, pubescent; spathe more or less pubescent, 2 cm. long, 1 cm. broad, falcate-acuminate, rounded posteriorly; the two large petals deep blue, reniform, 12 mm. long, 17 mm. broad, claw 3–4 mm. long; capsule depressed-globose, 5 mm. long. 4 mm. broad, obscurely 3-lobed, 3-celled, cells 1-seeded; seed broadly oval in outline, somewhat compressed, flat on one side, smooth, dark-brown.

The stems of this plant are generally prostrate, about 1 dm. long; occasionally one is found with longer and ascending stems, but they are very rare. Collected in the high pine land region at Umatilla early in August.

There are two specimens in the Columbia College herbarium which evidently belong here, one collected by Dr. Chapman, and the other by Mr. Blodgett at Key West.

Near to *C. hamipila* Sauvalle, of the West Indies. That is diffusely branched; has a smaller seed, gray in color, narrower and longer leaves, longer sheaths, not inflated, and an ovoid capsule.

Named in honor of Mr. W. T. Swingle, Director of the Sub-Tropical Laboratory at Eustis, to whom I wish to extend my thanks for the many favors shown me. His knowledge of the country and flora, which were freely imparted, enabled me to make much more valuable and extensive collections than would have otherwise been possible.

1015. *Peltandra sagittaefolia* (Michx.) Morong.

Occurs in the bayheads, generally among sphagnum. It is by no means common.

148. *Lachnocaulon Beyrichianum* Sporleder.

This is another rare plant, but very common around Eustis, along the shores of the clear water lakes. It grows in small tufts, generally among tall grass.

1295. *Lachnocaulon Beyrichianum* Sporleder?

Appears to be the same as No. 148, but the heads are much larger than the original description calls for.

1407. *Cyperus leucolepis* Carey.

This rare plant was previously only known from a single collection. I found it growing quite freely in one place at Eustis. Its silvery white scales make it very conspicuous among the tall grass.

STENOPHYLLUS FLORIDANUS Britton, n. sp.

Similar to *S. capillaris*, culms filiform, erect, 10 cm. to 20 cm. tall, much exceeding the thread-like leaves. Sheaths ciliate; spikelets linear, acute, several-flowered, rich brown, 4 mm. to 8 mm. long, 1 mm. wide, sessile and densely capitate in 4s to 10s at the summit; scales ovate-lanceolate, keeled, about 1 mm. long, with a minute slightly spreading tip; achene obovoid, 3-angled, light-colored, slightly longer than thick, the angles rounded, the faces somewhat concave, the whole surface cellular-reticulated, its cells oblong; style glabrous, 3-cleft for about one-fourth its length.

Dry sandy soil, high pine land.

566. *Setaria flava* Kunth.

This appears to be new to the United States.

1382. *Setaria Ventenatii* Kunth.

Also an addition to the flora of the United States.

831. *Marsilia vestita* H. & G.

This was found growing in abundance at Orange Bend, the same place from which Prof. Underwood reported it. The plant occurs along the track on both sides of the depot for about one-quarter of a mile. It is confined to that limited area so far as I could find out. Its occurrence at such a distance from its ordinary range and its limitation to this small section point very strongly to its being introduced.

John H. Redfield.

By Wm. M. Canby.

(with portrait.)

On the banks of the beautiful Connecticut and near the center of the State of the same name is to be found the place anciently and still called Middletown; and, in accordance with a custom nowhere so common as in New England, of retaining for offshoots from the original settlements the name of the mother town with a prefix or a suffix, the little hamlet, a few miles up the river, was of old called by the somewhat picturesque name of "Middletown Upper Houses," now, alas! changed to the unmeaning one of Cromwell. Here, on July 10, 1815, the subject of this sketch was born. He could claim John and Priscilla Aiden among his ancestors and was in every way of pure New England blood. Many of his family had been sea captains, a vocation nowhere represented by more honorable, hardy and vigorous men than on our northern coast. His father, William C. Redfield, at this time a country storekeeper in humble circumstances, was a man of enterprising character and of an unusually inquiring and vigorous mind. The son only knew his mother as an invalid and she died when he was but four years old; and although his father married afterward, he was again bereaved; so that his son owed much of his good bringing-up to a widowed relative who came to take charge of the household and who, according to the custom of those days, did not stint the lessons to be derived from the "New England Primer" and the "Shorter Catechism." Other lessons, more pleasant perhaps, came to him early from his father and served to stimulate his inherited scientific tastes.

The following pleasant account is of one of these which occurred when he was six years old during a long ride taken soon after the storm long known as the "Great September Gale." * "My father's habits of close observation led him to watch the fallen trees and the effects of that destructive wind. At Middletown the wind had been from the southeast and the trees lay

* See Oliver Wendell Holmes' poem "The September Gale."

with their heads northwestward; but on reaching Berkshire he was surprised to see that they lay in an opposite direction and he repeatedly called my attention to the fact. In conversing with the residents of that region as to the time these trees were prostrated he was still more astonished to learn that the wind, which at 9 P. M. had been from the southeast at Middletown, had been at Stockbridge from the northwest precisely at the same hour. * * * * It did not appear to him possible that two winds of such violence should be blowing against each other at the distance of only seventy miles. The only explanation of this paradoxical phenomenon was one which he was then led to accept hypothetically, but which he afterwards confirmed by years of observation and innumerable facts." It was thus that the elder Redfield was led to the theory of the rotary as well as progressive movement of storms which procured him so much note as a meteorologist.

Our friend's first public education came from the district school, which his father had taken great pains to have above the usual standard. In addition, there were the "spelling classes" and "friendly associations," and a small circulating library—agencies which he acknowledged to have been helps to him in his aspirations for knowledge, as they have been to many others. Of the effects of the "spellling class" exercises he says: "I am foolish enough to believe that those winter evening battles were more useful and creditable than some of the athletic contests which in these days are doing so much to brutalize young men, and which, by their attendant betting leading to the worst results of gambling, are tending to make old and thoughtful men raise the question whether colleges are not becoming institutions to be avoided."

Of books at this time there were but few, but all he could get he read with avidity. Like every one else, he was fascinated with Bunyan's Pilgrim's Progress, both as to the story and the quaint old prints. He writes: "That of Apollyon's battle with Christian so excited my imagination that when, being a little older, I was sent to the wood pile in the fast darkening twilight of a winter afternoon to bring in the evening supply of wood, I never felt altogether secure from that dreadful demon until the last armful was

fairly in;" which leads one to wish that these Apollyons would always scare the bad boys and never the good ones.

One other book, forgotten now perhaps, gave him the bent towards botany, which afterwards so much occupied him. This was Thornton's Grammar of Botany.

About this time steam navigation was occupying the father's mind and after some efforts in that way on the Connecticut his attention was turned to the Hudson. He was thus frequently in New York for long periods while the son's education was continued for a year and a half at Stamford. Finally, in 1824, the family was removed to New York. The boy was now sent to the High School where, under the influence and instruction of one of the teachers, a Mr. Barnes, he was instructed in mineralogy and had many a pleasant ramble in the country in his company. His school education was finally completed by a short course which he provided for himself at a private school, but between these two periods he attended the chemical lecture course of Dr. Torrey, an association which must have had great influence in his pursuits in after life. His first business occupation was in a dry goods store, where he continued long enough to acquire a thorough detestation of it. He then assisted his father in his steam transportation ventures and this occupied his business hours for many years. It is of more interest to us to know that his love of science continued and was intensified when, in 1836, he became a member of the New York Lyceum of Natural History, of which Dr. Asa Gray was then the Librarian and Superintendent. Here was commenced that friendship which was destined to be close and lasting. It was at this time that he acquired a taste for conchology, in which he made much progress and which resulted in a number of papers on this subject published in the Annals of the Lyceum. He thoroughly explored the country in the vicinity, over land much of which is now probably closely built upon, and in every way which the time at his command and his means permitted strove to advance the scientific interests of himself and his associates. As early as 1846 he became a member of the Academy of Natural Sciences, of Philadelphia. In 1843 he made a very happy marriage and this, perhaps, was the eventual cause of his removal to

Philadelphia in 1861, where he long held a prominent position in the extensive and well-known car wheel works of A. Whitney & Sons, with the members of which his marriage connected him. His allegiance was necessarily transferred from the Lyceum to the Academy, of which he soon became a life member, and was gradually advanced to many of its most important and laborious offices. Thus, in 1870, he became a member of its Council and was also made Conservator of its Botanical Section, the latter a most important office as it placed the various and very important herbaria in his charge. He was Corresponding Secretary of the Conchological Section in 1879, and after having been long a member of its Publication Committee was made its Chairman in 1891. It will thus be seen how important his services were to this institution and how great the esteem in which his good sense and active exertions as well as his wise and thoughtful counsel were held by his associates. But beyond all this, and especially after his retirement from business cares in 1885, he accomplished a great work which no one else connected with the Academy had time to do and for which, indeed, no one was better fitted than he. When he took charge he found four distinct herbaria as follows: that of Dr. C. W. Short; that of Schweinitz, composed principally of Fungi, very many of them types; the General Herbarium, and the North American Herbarium, the latter of which is of the utmost value, not only because of its size and completeness, but also because it contains a large number of the type specimens of Nuttall, Pursh and others of early botanists of this country. The specimens in these were loose in sheets of paper, very often those of more than one collector huddled in together, with the labels but loosely attached to the specimens. With great care and good judgment, and an indefatigable energy, he brought order out of this confusion, so that at last he had got the greater and more valuable parts of the herbaria arranged and mounted and properly catalogued. Nor did his benefations end with this, for he purchased all valuable sets of plants and bestowed them upon the Academy. The tender and appreciative minute adopted by it and hereafter appended is but a fitting testimony to his usefulness and unselfish devotion.

Mr. Redfield lived for many years in one of the pleasantest

parts of Philadelphia and quite close to the Academy. He made occasional botanical excursions, of which notable ones were to the mountains of North Carolina in company with Dr. Gray and other botanists. There could not have been a more delightfully cheerful and obliging travelling companion. The writer well remembers that on one occasion when at Linville Falls, in what was then the wildest and least frequented part of the country, Mr. Redfield "turned up missing," to the serious concern of the rest of the party. After considerable search he was found sitting on a mossy bank, writing up his diary with the utmost serenity, cheerfully answering anxious inquiries by saying, "Oh, I knew you would come for me." In later years his summers were spent on Mt. Desert Island. The excellent catalogue of its flora lately published by Mr. Rand and himself attest his industry while there.

It is impossible to speak too highly of Mr. Redfield's personal character. Honorable, sincere, courteous, cheerful, always ready to do a kind act or to say a gracious word, he displayed that true nobility of character which comes of right principle faithfully adhered to, yet without a trace of aceticism or austerity.

Mr. Rand writes: "He was always being good and doing good. I have letters lamenting his death from young botanists, whose names even he may not have remembered or known, all telling the same story,—'he was so good to us, so kind in his interest and help, so courteous to us in our ignorance.'" The Rev. Dr. Dickey said of him: "I have touched many good lives and found pleasure and example in close intercourse with many, * * * * but I have never touched a smoother life than this. * * * It was not the quietness of silence—it was like the soothing murmur of a mountain brook; there was a beauty and fragrance like the beauty and fragrance of wild flowers, in this simple yet vigorous life."

And so one cannot wonder that he won sincere and lasting affection and left a bright example of a right-living, true-hearted and attractive gentleman. Once, indeed, the serenity and happiness of his old age was broken by the stroke of a severe bereavement; but it only the better showed the strength of his character.

"And the more
Fate tried his bastions, she but forced a door
Leading to sweeter manhood and more sound."

After some weeks of failing health he died on the twenty-seventh of Febrauary last, in the eightieth year of his age.

A beautiful western grass, the *Redfieldia flexuosa* commemorates his name and services.

Appended are testimonials of learned societies and a bibliography.

FROM THE ACADEMY OF NATURAL SCIENCES.

The Academy of Natural Sciences of Philadelphia has heard with deep sorrow the announcement of the death of John H. Redfield, who, in his unselfish devotion to its interests, has long been one of its most active benefactors.

Always an earnest student of nature his last years of deserved freedom from business engagements were devoted to his favorite studies in connection with the Academy, and to the arrangement and care of the Herbarium.

The steady growth and admirable condition of the botanical collection constituted an enduring memorial of his industry and zeal.

As Chairman of the Publication Committee and Member of the Council the same fidelity and discretion characterized the discharge of his duties.

He was a man of strong but tender character; firm in his support of the right, but tolerant of all honest difference of opinion; cheerful, gentle, modest and cultured. Time to him was one of his most precious possessions, yet he was ever gladly at the service of those requiring advice or assistance.

He was an earnest student, a wise counsellor and a steadfast friend. His encouragement and loving sympathy endeared him to his associates, who felt for him a personal affection which enables them to appreciate the irreparable loss sustained by his family, to whom they would offer their heartfelt sympathy.

FROM THE NEW YORK ACADEMY OF SCIENCES.

The Academy has learned with sorrow of the death of Mr. John H. Redfield, at his home, in Philadelphia, on February 27th, 1895.

Mr. Redfield was one of the earliest members of the Lyceum of Natural History, having been elected in 1836. During his

years of residence in New York he was most active in furthering the work of the Lyceum, a frequent contributor to its proceedings and the author of several conchological papers which were printed in its Annals. In connexion with his father, Mr. W. C. Redfield, he published, in Vol. IV. of the Annals, the first description of fossil fishes from the Mesozoic rocks of America, proposing the name of the genus *Catopterus* and its type species *C. gracilis*, besides some others, for specimens from the Triassic beds at Durham, Conn. He was thus the pioneer in this important branch in American palaeontology. He held the office of Recording Secretary of the Lyceum in the years 1887–8, and of Corresponding Secretary for the entire period from 1839 to 1860. After his removal to Philadelphia he did not lose his interest in the Lyceum, but continued his relations with it as a Corresponding Member, not only through the whole period of its existence under the old name, but also when the organization was changed and enlarged into the Academy and down to the time of his death. When the memorial volume was published, in 1887, Mr. Redfield furnished a large amount of most valuable data and reminiscences, which are embodied and acknowledged at many points in the book.

Although personally known to but few of our present members, many have known of his great work in connexion with the Academy of Natural Sciences in Philadelphia, and by reason of this, and his early prominence in our Society, he has had our profound respect and grateful esteem. It is, therefore,

Resolved, That it is the sense of the Academy that in the death of Mr. John H. Redfield, American science has lost a critical and enthusiastic student, a liberal patron and a devoted friend; and the Academy a co-laborer who greatly aided in its early period of organization, as an officer and a scientific investigator, and who was almost the last to connect its present membership with the generation of its founders and pioneers.

FROM THE TORREY BOTANICAL CLUB.

Mr. John H. Redfield, a highly esteemed active member of the Club since the time of its organization, the last but one of its original incorporators, a frequent contributor to our publications, the Conservator of the Botanical Section of the Philadelphia Academy of Natural Sciences, and well-known to the botanical

world as an author and editor, died at his home in Philadelphia, February 27th, 1895. Therefore it is

Resolved, That the following record be made in our minutes: As a scientific co-laborer, we found in Mr. Redfield an enthusiastic lover of nature and of knowledge for its own sake, an energetic and persistent worker in the field and in the closet to the very end of a long and memorable life, and a gentleman of ripe culture and pleasant manners, always generous and helpful to others, and, though firm in his convictions as to what was right, ever modest and courteous in the expression of them.

Resolved, That in his death we mourn the loss of a valued associate and an ardent and faithful friend.

Resolved, That this action be printed in our proceedings and a copy thereof transmitted to the family of the deceased.

List of Scientific Papers and Notices by John H. Redfield.

1. Fossil Fishes of Connecticut and Massachusetts, with a Notice of an undescribed Genus. Ann. N. Y. Lyc. Nat. Hist. **4**: 35. *pl. 2.* 1837.

2. Descriptions of some new Species of Shells. Ann. N. Y. Lyc. Nat. Hist. **4**: 163. *pl. 2.* 1846.

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A fossil marine Diatomaceous Deposit at St. Augustine, Florida.

By Charles S. Boyer.

In 1886 an artesian well was sunk at the Ponce de Leon Hotel, at St. Augustine, Florida. Samples of earth from different depths were sent to Mr. Lewis Woolman, who proposes to publish the results of his investigations into the geological character of the different strata. A layer of bluish clay at a depth of between 85 and 135 feet was found to contain diatoms, spicules, foraminifera and a few polycistinae. Unfortunately, the material was very small in amount, and the diatoms occurred in but two layers at the depths of 90 and 120 feet, so that the list furnished below, although exhaustive of the material obtained, appears to but indicate the existence of a richer bed which, it is hoped, may be

brought to light by another well-boring or the discovery of some outcrop.

It may be briefly stated, according to Mr. Woolman's conclusions, that the diatomaceous clay bed immediately overlies an Eocene deposit and is beneath a Pleistocene. As will be noticed, the diatoms correspond, to a great extent, to those of the great Miocene beds of the Atlantic coast, such as the Richmond, Nottingham and Atlantic City deposits; the presence of one form, at least, if not two, appears to indicate a correspondence with the Barbadoes deposit, which is now claimed to be Pliocene, while other forms are still extant. It is, therefore, difficult to determine to what period the Florida deposit belongs.

The following are the forms:—

Actinocyclus Ehrenbergii Ralfs, several varities.

A. ellipticus Grun., rare.

A. interpunctatus Ralfs.

A. Ralfsii (Wm. Sm.) Ralfs.

A. subtilis (Greg.) Ralfs, var.

Actinoptychus Grundleri A. S.

A. undulatus Ralfs, several vars.

A. vulgaris Schum., several vars.

Aulacodiscus Crux Ehr., rare.

A. mammosus (var. *extans*?) Grev., very rare. Diam. 0. 152 mm. Surface, central portion, flat to about one-half of the radius, outer edge distinct but somwhat turned inward at the inflations, giving a slightly quadrangular outline. Central space in one specimen round, in the other irregular. Width of bullae *about one-fourth the radius.* In Greville's figure the width appears to be about one-half. The processes are also smaller in the Florida form. Not being able to secure a specimen of Greville's species for comparison, I am unable to determine the differences further. Mr. Adre. Le Tourneur, of Paris, from an examination of a photopraph sent him, thinks it may be the variety *extans* (Grev.) Rattr. This beautiful form is quite rare, only two nearly perfect valves and three fragments having been noticed. It has not been found, heretofore, we believe, in any other of the continental deposits, and its presence appears to link the Florida diatoms with those of Barbadoes.

A. Molleri Grun.

A. Rogersii (Bail.) A. S., common at 90 ft.

The deposit presents all the forms figured by Schmidt, with a number of intermediate variations.

Biddulphia Tuomeyi (Bail.) Roper. Several variations of this form approach *B. elegantula* Grev., and others are much smaller than the type.

Coscinodiscus apiculatus Ehr.

C. marginatus Ehr.

C. emphalanthus Ehr.

C. perforatus Ehr.

C. radiatus Ehr.

C. robustus Grev.

The forms of *Coscinodisci* noticed furnish an interesting study of variations, especially in those which approach *apiculatus* and *marginatus*.

Craspedodiscus coscinodiscus Ehr., 120 ft.

Eupodiscus radiatus Bail. A form with five ocelli occurs rareiy at the depth of 90 ft.

Goniothecum odontella Ehr., 90 ft.

Grammatophora maxima Grun. var.? rare.

Hyalodiscus laevis Ehr.

H. subtilis Bail. The markings in the greater number of specimens examined are much coarser than in the type form. In some valves which present a greenish color when dry, numerous spines are seen at regular intervals, and the zone between umbilicus and margin resembles that of *H. maximus*, P. Petit (Diatomee's de l'le Campbell, *pl. 4. fig. 7*). Other forms without spines correspond closely to the var. *Japonica* of Castracane (Rep. on Diat. coll. by H. M. S. Challenger, *pl. 18. fig. 4*).

Melosira sulcata (Ehr.) K., abundant.

Navicula Lyra Ehr., very rare, 90 ft.

N. praetexta Ehr., very rare, 90 ft.

Pleurosigma affine, var. *fossilis* Grun.

Podosira Montagnei Kütz.? , very rare, 90 ft. This form is doubtful as the rim is wider and the general appearance more robust than in any of the figures published.

Rhaphoneis gemmifera Ehr.

Rhizosolenia sp. ?

Stephanogonia (*Mastogonia*) *actinoptychus* Ehr., rare.

Stephanopyxis appendiculata Ehr.

S. corona (Ehr.) Grun.

S. turris (Grev.) Ralfs, rare.

Stictodiscus Trunanii Witt. ?, very rare, 90 ft. This form differs from that figured by Truan and Witt. (Die Diat. der Polycyst. von Jeremie in Hayti, *pl. 4. figs. 23 & 24*), inasmuch as the rim is less definite and the outline slightly irregular. Only one imperfect specimen was found. It appears to form another link between the continental and insular deposits.

Triceratium condecorum Ehr., rare, 90 ft.

T. Kainii E. A. Schultze, rare, 120 ft.

T. semicirculare Brightw.=*Euodia Brightwellii* Ralfs.

T. spinosum (Ehr.) Bail.

New Species of Parasitic Fungi.

By S. M. Tracy and F. S. Earle.

[Type specimens in the herbaria of the authors, of the U. S. Department of Agriculture, of Rutgers, Harvard and Columbia Colleges.]

Puccinia notabilis n. sp. III. Amphigenous; sori black, confluent, forming small hemispherical or irregular masses on the bracts and petioles or involving the larger stems, forming fusiform black gall-like swellings two or three times their diameter and 3–4 cm. in length; teleutospores uniformly oval and obtusely rounded, slightly constricted, epispore smooth, thickened at the apex, 55–60 by 30–33 μ; pedicel hyaline or slightly tinted, very long and flexuous, 225–275 μ.

On Arrow-wood (*Pluchea borealis ?*) Rio Penasco, New Mexico, January, 1895.

Puccinia Paspali n. sp. II. Usually hypophyllous, sometimes amphigenous; sori linear, sometimes confluent, dark brown; uredospores globose or obovate, very abundantly and sharply echinulate, brown, 24 by 25–30 μ. III. Sori linear, darker than te uredo sori, usually on the leaf sheaths; teleutospores irregular, 35 by 27 to 30 by 35 μ, usually oval, much constricted, with the slender nearly hyaline pedicel attached obliquely to one side of the lower end, often orbicular with the septum vertical and the

pedicel attached either to the septum or near it, and the epispore of both cells distinctly thickened at the apex.

On *Paspalum virgatum*, New Orleans, La., November, 1894.

USTILAGO CRUS-GALLI n. sp. Involving the panicles and upper nodes, making the panicles abortive and forming pustules sometimes 1 cm. in diameter at the nodes; spore masses powdery, black, at first covered by a gray membrane; spores oval or subglobose, fuscous, sharply echinulate, 9–10 by 11–13 μ.

On *Panicum Crus-galli*, Salt Lake City, Utah, August, 1887.

This seems to approach *U. Maydis*, but the spores, though equally echinulate, are uniformly larger and more elongated.

USTILAGO TONGLINENSIS n. sp. Spore masses infesting the ovaries and causing the glumes to open widely at maturity, black; spores globose, dark brown, sharply and thickly echinulate, 9–11 μ.

On *Ischaemum ciliare*, Tonglin, Singapore. H. N. Ridley.

USTILAGO ORNATA n. sp. Infesting the ovaries. Spore masses black, pulverulent, 20–30 mm. in diameter; spores subglobose, very thickly beset with strong and prominent echinulations which give the spore a burr-like appearance, 12–12 by 15 μ. Panicles bearing affected ovaries always remain partially enclosed within the sheath of the upper leaf.

On *Leptochloa mucronata*, Starkville, Miss., November, 1894.

USTILAGO PERTUSA n. sp. Infesting the ovaries; spore masses hard and compact, black, finally pulvinate; spores small, globose, epispore covered with prominent irregular verrucose projections, 5–7 μ.

On *Setaria macrochaeta*, Queensland. F. M. Bailey, 1890.

USTILAGO PUSTULATA n. sp. Infesting the ovaries, or forming rounded bullate swellings which often surround the entire stem and branches of the panicle, or form irregular distortions on the leaves and sheaths; spore masses dark brown, long covered by a stramineous membrane which is a distortion of the tissues of the host, 25–75 mm. in diameter; spores dark brown or fuscous, subglobose or oval, cell-wall very thin, slightly echinulate, 7.5 to 9 μ., or 7 by 9 μ.

On *Panicum proliferum*, Starkville, Miss., October, 1894.

DIMEROSPORIUM MAGNOLIAE n. sp. Epiphyllous, on small indefinite areas; mycelium of dark brown irregular branching and septate hyphae; conidia clavate, dark colored, 4–5-septate, 7–8 by 45–55 μ; perithecia depressed-hemispherical, black, usually in clusters of 5 to 10, astomous, 50–100 μ; asci numerous, broadly oval or obovate, 8-spored, 35–40 by 45–50 μ, paraphysate; paraphyses thread-like, colored towards the tips; sporidia biseriate, at

first hyaline, dark fuliginous when mature, obovate, 1-septate, constricted, 9-10 by 20-23 μ.

On living leaves of *Magnolia Virginiana*, Ocean Springs, Miss., May, 1894.

ASTERIDIUM ILLICII n. sp. Hypophyllous; mycelium none; perithecia black, scattered, orbicular, aplanate, membranaceous, cellular, not radiant, fragile, wrinkled, 200–400 μ; asci numerous, suborbicular, 8-spored, 30–40 μ; sporidia subpyriform, often curved, granular, colorless, at first uniseptate, becoming 3-septate at maturity.

On living leaves of *Illicium Floridanum*, Ocean Springs and Biloxi, Miss., March, 1889.

LAESTADIA ILLICICOLA n. sp. Amphigenous, occupying large irregular brownish subarid definitely limited areas, usually involving the apical half of the leaf; perithecia very numerous, scattered, erumpent, more abundant on the upper surface, black, membranaceous, suborbicular or lenticular, obscurely ostiolate, finally collapsing; asci without paraphyses, clavate, stipitate, thickened at the apex, 40–50 by 10–12 μ; sporidia ovoid or fusiform, continuous, hyaline, granular, about 15 by 5 μ.

On living leaves of *Illicium Floridanum*, Ocean Springs, Miss., March, 1892.

SPHAERELLA ANDROMEDAE n. sp. Hypophyllous; spots none; perithecia abundant, scattered, often covering the entire lower surface of the leaf, black, erumpent, ostiolate, at length collapsing; asci obovate, somewhat thickened at the apex; sporidia oval, hyaline, uniseptate, cells about equal; 7–8 by 2.5–3 μ.

On living leaves of *Pieris nitida*, Ocean Springs, Miss., March, 1888.

LEMBOSIA ANGUSTIFORMIS n. sp. Epiphyllous, on raised brown irregularly stellate blisters; mycelium scant; perithecia black, long and narrow, often flexuous, seldom branched, 60–80 by 175–300 μ; subiculum reduced to a few short flexuous slightly fuscous branching threads; asci broadly oval, about 15 by 18 μ; sporidia obovate, somewhat unequally uniseptate, constricted, at first hyaline, becoming light fuliginous, 8–10 by 4–5 μ.

On *Ilex coriacea*, Ocean Springs, Miss., May, 1894; Biloxi, Miss., July, 1894.

This differs widely from the following in gross appearance on the leaf, in the narrower perithecia, less conspicuous subiculum and smaller asci and sporidia.

LEMBOSIA PRINOIDES n. sp. Epiphyllous, on orbicular pallid

spots; mycelium scant, brown; perithecia scattered, black, subcarbonaceous, fimbriate-margined, elliptical, subacute, often forking, 200–350 by 120–150 μ; subiculum of dark brown irregular nodular usually continuous and branching brittle threads; asci ovate, 8-spored, 30–35 by 15–18 μ; sporidia elliptical, unequally uniseptate, somewhat constricted, subhyaline, becoming fuliginous, 10–15 by 4–5 μ.

On *Ilex coriacea*, Biloxi, Miss., July, 1893.

LEMBOSIA ILLICIICOLA n. sp. Epiphyllous, on large light brown orbicular or irregular areas; perithecia numerous, superficial, carbonaceous, usually linear and strict, occasionally triangularly stellate, 100 by 300–400 μ; subiculum of light brown flexuous transparent continuous variously branching and anastomosing threads; asci very numerous, oval or ovate, 8-spored, 25–30 by 12 μ; sporidia oval, uniseptate, slightly constricted, ends obtusely rounded, hyaline, at length slightly colored, 8–10 by by 3–4 μ.

On *Illicium Floridanum* with *Asteridium Illicii*, Ocean Springs, Miss., March, 1889.

VERMICULARIA STACHYDIS n. sp. Perithecia scattered, subsuperficial; setae somewhat floccose and nodular, septate, olivaceous, paler towards the tips, which are obtuse and slightly enlarged; conidia falcate, attenuate at each end but without evident basidia, guttate, at length faintly 4–5-septate, 35–40 by 3–4 μ.

On dead stems of *Stachys affinis*, Starkville, Miss., October, 1893.

This differs from other described species in the larger, at length several-septate conidia, and the weak rather light colored setae with swollen tips.

DIPLODIA MINUTA n. sp. Scattered over indeterminate whitened areas; perithecia erumpent, small, 90–120 μ, membranaceous, smooth, ostiolate; sporules minute, oval, uniseptate, not constricted, light yellow, 6–8 by 3–4 μ.

On living stems of *Tecoma radicans*, with *Pestalozzia breviaristata*, Starkville, Miss., March, 1895.

DIPLODIA SASSAFRAS n. sp. Perithecia very numerous over large areas, black, hemispherical, erumpent, finally opening by an irregular fissure; sporules numerous, ovate, fuscous or nearly black, with a very distinct hyaline septum near the smaller end, 13–14 by 5–6 μ.

On living twigs and branches of *Sassafras*, Starkville, Miss., April, 1894.

HENDERSONIA TAPHRINICOLA n. sp. Epiphyllous, on white bordered spots. Perithecia scattered, black, erumpent, at length collapsing; conidia truncate, cylindrical, fuliginous, 2-septate, constricted at the septa, 12–14 by 4–5 μ.

On old whitened blisters of *Taphrina* on *Quercus Virginiana*, Ocean Springs, Miss., February, 1887.

PESTALOZZIA CLIFTONIAE n. sp. Epiphyllous, on orbicular arid brown-bordered spots. Acervuli scattered, bursting through the dried epidermis; conidia obovate, sometimes curved, 4-septate, septa often oblique, three medial cells fuliginous, the upper two dark and opaque, the lower one paler, basal cell colorless, small, short, acute, abruptly contracted to the short stipe; apical cell reduced to a short colorless apiculus bearing the three widely divirgent setae, 16–18 by 8 μ; setae 12–14 μ.

On living leaves of *Cliftonia ligustrina*, Ocean Springs, Miss., November, 1893.

PESTALOZZIA BREVIARISTATA n. sp. Acervuli scattered over indefinite whitened areas, black, at length collapsing; conidia curved, elliptical, 5-septate, apical and basal cells colorless, medial cells fuscous, septa often diagonal, 25–27 by 7–8 μ; stipe hyaline, half the length of the conidium, somewhat swollen at the base, often deciduous; arista single, strongly oblique, thickened, scarcely one-fourth the length of the conidium.

On living stems of *Tecoma radicans* with *Diplodia minuta*, Starkville, Miss., March, 1895.

SCOLECOTRICHUM PUNCTULATUM n. sp. Amphigenous; spots indefinite; hyphae in small caespitose clusters, irregularly flexuous and nodular, olivaceous, 2–3-septate, 60–70 by 5–6 μ; conidia oval or oblong, ends obtusely rounded, fuscous, epispore distinctl granulose or punctulate, typically uniseptate but often continuous, and occasionally 3-septate, 15–20 by 6–8 μ.

On *Iris pabularia*, Starkville, Miss., January, 1894.

CERCOSPORA FLEXUOSA n. sp. Forming large indefinite effused patches on the under side of the leaf. Hyphae ferruginous, irregularly flexuous throughout, sometimes branched, many-septate, denticulate, 75–150 by 4–5 μ; conidia obclavate, fuscous, 2–6, 3–4-septate, not constricted, 20–30 by 4–5 μ.

On leaves of *Diospyros Virginiana*, Biloxi, Miss., July, 1892, and Ocean Springs, Miss., October, 1889.

This differs from *C. Diospyri* (Thum.) Cke. in its septate hyphae and much longer spores, and from other *Cercosporas* reported on the same host in the absence of definite spots.

CERCOSPORA GRAMINICOLA n. sp. Spots none; amphigenous and most abundant on the midvein; hyphae caespitose, straight or somewhat flexuous, fuscous, 2–3-septate, 75–100 by 4–5 μ; conidia clavate, continuous when young but finally becoming 1–3-septate, fuscous, 35–40 by 7.5–10 μ.

On languishing leaves of *Phleum pratense*, Starkville, Miss., November, 1894.

CERCOSPORA HIBISCI n. sp. Hypophyllous, on large indeterminate areas; hyphae fuliginous, clustered, somewhat irregular, once or twice septate near the base, 25–40 μ; conidia obclavate, somewhat curved, hyaline, guttulate, at length faintly 3–5-septate, 40–60 by 3–4 μ.

On living leaves of *Hibiscus esculentus*, New Orleans, La., November, 1894.

CERCOSPORA MARITIMA n. sp. Amphigenous; not forming definite spots, but densely effused over considerable dark-colored areas; hyphae fasciculate, mostly straight, olive brown, 5–6-septate, often swollen at the septa, 40–100 by 4–6 μ: conidia paler, elongated, straight or slightly curved, mostly uniseptate, the upper cell shorter and broader than the lower, 50–60 by 5–7 μ.

On *Croton maritimum*, Horn Island, Miss., March, 1892.

CERCOSPORA MISSISSIPPIENSIS n. sp. Amphigenous, but more abundant on the under side of the leaf. Spots small, brownish, irregular, usually bounded by the veins, surrounded by an irregular raised and darker border having a pallid outer margin; hyphae divergent, irregularly floccose, nodular, usually uniseptate above the somewhat bulbous base, 60–70 by 5 μ; conidia fuscous, narrowly clavate, tapering from the rather obtuse apex to the attenuated filiform nearly hyaline base, 4–8 or more septate, 75–150 by 4–5 μ.

On *Smilax glauca*, and *S. rotundifolia*, Starkville, Miss., November, 1893.

TETRAPLOA DIVERGENS n. sp. In black irregularly linear masses; conidia broadly oval, dark-fuliginous, 12-14 by 8-9 μ, quarternately divided, each division usually 2-septate, and terminated by an obtuse semi-transparent continuous divergent horn-like projection, 4-5 μ in length.

On living or languishing leaves of *Panicum agrostidiforme*, Starkville, Miss., October, 1894.

The Systematic Botany of North America.

The Board of Editors of the "Systematic Botany of North America" announce the following arrangements for the monographing of groups thus far decided on. Other assignments will be reported as made. It is requested that collectors communicate material for study to the monographers, even of the commoner and well-known species, so that the geographical distribution may be presented as accurately as possible.

MYXOMYCETES: Mr. O. F. Cook, Huntington, N. Y. (at present abroad).
SCHIZOMYCETES: Prof. H. L. Russell, University of Wisconsin, Madison, Wis.
CHLOROPHYCEAE: In charge of Prof. Geo. L. Atkinson, Cornell University.
PHYCOMYCETES: Prof. Byron D. Halsted, Rutgers College, New Brunswick, N. J.
SACCHAROMYCETES: Dr. J. Christian Bay, State Board of Health, Des Moines, Iowa.
TAPHRINEAE: Prof. Atkinson.
HELVELLINEAE: Prof. Lucien M. Underwood, Greencastle, Ind.
PEZIZINEAE, PHACIDINEAE: Mr. Ellis J. Durand, Cornell University.
FUNGI IMPERFECTI: Prof. Byron D. Halsted, Rutgers College, and Mr. J. B. Ellis, Newfield, N. J.
USTILAGINEAE: Prof. Halsted.
UREDINEAE: Prof. J. C. Arthur, La Fayette, Ind.
POLYPORINEAE: Prof. Underwood.
BOLETINEAE, AGARICINEAE: Prof. Chas. H. Peck, State Museum, Albany, N. Y.
GASTEROMYCETES: Mr. A. P. Morgan, Preston, Ohio.
HEPATICAE: Prof. Underwood.
MUSCI—*Acrocarpi:* Mrs. N. L. Britton, Columbia College, New York City; *Pleurocarpi:* Prof. C. R. Barnes, University of Wisconsin; *Sphagnaceae:* Mr. John K. Small, Columbia College, New York City.
PTERIDOPHYTA: Prof. Underwood.
TYPHACEAE, SPARGANIACEAE, NAIDACEAE, JUNCAGINACEAE: Manuscript of the late Dr. Thos. Morong.
ALISMACEAE: Mr. Jared G. Smith, U. S. Department of Agriculture.
HYDROCHARITACEAE: Manuscript of Dr. Morong.
GRAMINEAE: In charge of Prof. F. Lamson-Scribner, U. S. Department of Agriculture.
CYPERACEAE: Prof. L. H. Bailey, Cornell University, and Prof. N. L. Britton, Columbia College.
ARACEAE: Manuscript of Dr. Morong.
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COMMELINACEAE: Mr. J. N. Rose, U. S. Department of Agriculture.
JUNCACEAE: Mr. F. V. Coville, U. S. Department of Agriculture.
LILIACEAE: Mr J. N. Rose.
SMILACEAE: Manuscript of Dr. Morong.

DIOSCOREACEAE: Prof. A. S. Hitchcock, Kansas Agricultural College, Manhattan, Kansas.

SAURURACEAE, PIPERACEAE, CASUARINACEAE: Mr. T. H. Kearney, Jr., U. S. Department of Agriculture.

JUGLANDACEAE: Prof. N. L. Britton.

MYRICACEAE: Prof. Britton.

LEITNERIACEAE: Prof. Wm. Trelease, Missouri Botanical Garden.

SALICACEAE: Mr. M. S. Bebb, Rockford, Ill. (*Salix*).

BETULACEAE, FAGACEAE, ULMACEAE, MORACEAE; Mr. Geo. B. Sudworth, U. S. Department of Agriculture.

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POLYGONACEAE: Mr. John K. Small, Columbia College.

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AMARANTHACEAE: Messrs. E. B. Uline and W. L. Bray, Lake Forest University, Lake Forest, Ill.

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PORTULACACEAE: Mr. Jepson.

NYMPHEACEAE: Prof. Chas. A. Davis, Alma College, Alma, Mich.

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EMPETRACEAE: Prof. Hitchcock.

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VITACEAE: Prof. L. H. Bailey.

LOASACEAE: Dr Wm. E. Wheelock.

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HALORACEAE: Studies of Dr. Morong.

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CORNACEAE: Pres. Coulter.

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GENTIANACEAE: Mr. Chas. L. Pollard, U. S. Department of Agriculture.

BORAGINACEAE: Prof. Edward L. Greene, University of California.

VERBENACEAE: Prof. A. S. Hitchcock.

SOLANACEAE, SCROPULARIACEAE: President Coulter.

CICHORIACEAE, COMPOSITAE: Prof. Greene (*Aster* and *Solidago* by Prof. Thos. C. Porter, Lafayette College, Easton, Penn.).

Botanical Notes.

A Redfield Memorial Herbarium Fund. It has been decided that no better monument to the memory of John H. Redfield could be erected than to arrange for completing and caring for the work he loved, and to which he gave freely so many years of his life—namely, the Herbarium of the Academy of Natural Sciences. Mainly through his disinterested labors, it stands to-day scarcely second to any in the United States, containing, besides many unnamed, over thirty-five thousand named species of flowering plants and ferns, the half of which have been verified and fastened down.

No one can probably be found to give the years of time he so freely gave. In order to carry on the work, and add to the collection, as exploring expeditions afford the opportunity, it has been proposed to establish a fund for its maintainance.

Mr. Redfield's will provides that his herbarium, minerals, shells and scientific works shall be sold to help the Herbarium—thus furnishing a nucleus for the proposed fund. It is in mind to raise $20,000, but the interest of any sum that may be contributed can at once be made available. Statements will be furnished from time to time to contributors, keeping them informed of the progress of the contributions. Checks may be made payable to the order of Thomas Meehan, Director, or Stewardson Brown, Treasurer, and mailed to either at the Academy of Natural Sciences, Nineteenth and Race streets, Philadelphia.

Announcement of the next Meeting of the American Microscopical Society. The next meeting of the American Microscopical Society will be held at Cornell University, in Ithaca, N. Y., August 21, 22 and 23, 1895, that is the week previous to the meeting of the

American Association for the Advancement of Science, which is to be held in Springfield, Mass.

The unsurpased beauty of the location of the University, and the richness of both its terrestrial and aquatic fauna and flora, make this an ideal place for holding the meeting. It is equally attractive to the student of natural history and to those who love beautiful scenery.

The University buildings, which will be at the disposal of the Society, are especially adapted for the formal presentation of papers, blackboard illustrations, hanging of diagrams, etc., as well as for any demonstration that authors may desire to make. The armory is very conveniently located, both for the University and for the city, and a soiree there can hardly fail to be a great success.

Besides the attraction of papers and demonstrations by members, nearly all the opticians have expressed not only a willingness but a desire to be present and make an exhibit of their microscopes and microscopical apparatus, thereby affording the members an opportunity to see all the new and standard apparatus.

A special feature of the coming meeting will be the setting apart of one or more sessions for the reading of papers on methods and the demonstration of special or new methods. The chairman of the local committee, Professor W. W. Rowlee, or the President, will be glad to receive requests from those who desire to have some specially difficult method or structure elucidated, and an effort will be made to get some member particularly expert in such subject to demonstrate it before the Society.

Proceedings of the Club.

TUESDAY EVENING, MARCH 12th, 1895.

Vice-President Lighthipe in the Chair and 24 persons present.

The following were elected active members: Mr. Claude Crittenden, Mrs. Wm. Starr Dana, Mr. Eugene H. Van Nest, Mr. James P. Gardner, Mr. S. Cook.

The Committee appointed to draw up resolutions on the death of Dr. J. Bernard Brinton presented a report which was accepted, and a copy of it placed on file.

The Instruction Committee reported progress, and submitted the prospectus of the summer class for 1895. The report was accepted.

The Chair appointed the following Field Committee for 1895: Chairman, Mr. Small; Mrs. Britton; Mr. Tyler; Mr. Van Sickle; Dr. Rusby.

The announced papers of the evening were then presented as follows:

George V. Nash, "Remarks on some new and little-known Plants of Central Florida." Illlustrated by specimens. (Published in this issue of the BULLETIN.)

Elizabeth G. Britton, "Some Notes on the Genus *Mnium*." (To be published in a subsequent issue of the BULLETIN.)

A. Cogniaux, "Descriptions of new Melastomaceae from Bolivia," communicated by Dr. Rusby. (To be published in a subsequent issue of the BULLETIN.)

WEDNESDAY EVENING, MARCH 27TH, 1895.

Dr. Britton in the Chair and 34 persons present.

Mr. Eugene Smith, Miss Bliss, Miss Augusta Bliss and Miss Edith Parish were elected active members.

Dr. Britton announced the death of Mr. John H. Redfield, and remarked upon his life and labors. The Secretary also spoke upon the subject. Mr. Small moved that the Chair appoint a committee of three to draft suitable resolutions. Upon the adoption of the motion, a committee was appointed, consisting of Mr. Small and Professors Porter and Rusby.

Dr. Albert Schneider read his announced paper on "The Biological Status of the Lichens," maintaining that they are entitled to recognition as an independent group, and not to be classed as a division of either Algae or Fungi. It will be published in a subsequent issue of the BULLETIN.

Index to recent Literature relating to American Botany.*

Alwood, W. B. Ripe Rot or Bitter Rot of Apples. Bull. Va. Agric. & Mech. Coll. (II.) 3: 59–82. *pl. 2.* My. 1894.
Description of *Gloeosporium fructigenum* Berk. with a bibliography.

Bailey, L. H. Experimental Evolution amongst Plants. Am. Nat. 29: 318–325. Ap. 1895.
Argument that species have repeatedly been evolved by cultivation.

Bastin, E. S. Structure of *Veratrum viride.* Am Journ. Pharm. 67: 196–203. *f. 1–6.* Ap. 1895.

Brandegee, T. S. *Mimulus Clevelandii.* Gard. & For. 8: 134. *f. 20.* 3 Ap. 1895.
A new species from Southern California.

Britton, N. L. Publication by Signatures. Erythea, 3: 50–52. 1 Mr. 1895.
With notes on the subject by E. L. Greene.

Clinton, G. P. Relationship of *Caeoma nitens* and *Puccinia Peckiana.* Bot. Gaz. 20: 116, 117. 16 Mr. 1895.

Cogniaux, A. Orchidaceae.—II. Flora Bras. 117: 158–318. *pl. 35–75.* 15 Ja. 1895.

Durand, E. J. Sporangial Trichomes in certain Ferns. Bull. Torr. Bot. Club, 21: 408. 1894.

Durand, E. J. The Development of *Olpidium,* one of the Chytridiaceae. Bull. Torr. Bot. Club, 21: 410. 1894.
Describes briefly the development of *Olpidium entophytum,* A. Braun, in the cells of *Spirogyra.*

Gibson, W. H. Welcomes of the Flowers. Harper's Mag. 1894: 551–556. *figs.* Mr. 1894.
Discusses relation of insects to flowers, wild and cultivated.

Golden, K. E. Movements of Gases in Rhizomes. Proc. Am. Assoc. Adv. Sci. 43: [reprint, pp. 10]. 1894.

Graves, J. A., Chairman. The Pteridophyta of North America, north of Mexico. Linnaean Fern Bull. 9: pp. 23. Binghampton, 1895.
A numbered list of species and varieties.

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* It is requested that omissions from this list be communicated to the editors.

Greene, E. L. *Ceanothus leucodermis*, n. sp. Kew Bulletin, 97: 15. Ja. 1895.

Description of a new species from California, found in Kew Herbarium; with discussion of *C. di aricatus.*

Greene, E. L. Corrections in Nomenclature.—VI. Erythea, 3: 36. 1 F. 1895.

Greene, E. L. Novitates occidentales.—XI. Erythea, 3: 44–49. 1 Mr. 1895.

New species of *Ranunculus, Roripa, Tissa, Trifolium, Raillardella, Crepis, Allocarya, Collinsia* and *Habenaria.*

Greene, E. L. Novitates occidentales.—X. Erythea, 3: 17–24. 1 F. 1895.

New species in *Vicia, Lupinus, Trifolium, Thermopsis, Ranunculus, Erigeron, Pyrrocoma, Senecio, Agoseris, Phacelia* and *Linanthus.*

Greene, E. L. Observations on the Compositae.—VIII. Erythea, 3: 6–15. 2 Jl. 1895.

Discusses *Aplopappus* and *Chrysoma* with several transfers of species. Establishes the genera *Stephanodoria, Petradoria* and *Osbertia* for previously described species.

Greene, E. L. Some Species of *Dodecatheon.* Erythea, 3: 37–40. 1 Mr. 1895.

Describes *D. radicatum, D. alpinum, D. tetrandrum* Suksdorf and *D. conjugens.*

Hansen, G. Flora of the *Sequoia* Region collected in the Counties of Amador, Calaveras and Alpine, State of California. Pamph. pp. 14. 1 Ja. 1895.

A list of several hundred species.

Hasse, H. E. Lichens of the Vicinity of Los Angeles.—I. Erythea, 3: 41–44. 1 Mr. 1895.

Havard, V. Food Plants of the North American Indians. Bull. Torr. Bot. Club, 22: 98–123. 27 Mr. 1895.

Hooker, J. D. *Schinus dependens.* Curt. Bot. Mag. 51: *pl. 7406.* Mr. 1895.

Native of South America.

Hooker, J. D. *Weldenia candida.* Curt. Bot. Mag. 51: *pl. 7405.* Mr. 1895.

Native of Mexico and Guatemala.

Kelsey, F. D. Some Field Notes. Bot. Gaz. 20: 117–118. 16 Mr. 1895.

Kenyon, F. C. In the Region of the new Fossil, *Daemonelix.* Am. Nat. 29: 213–227. *pl. 11. figs.* Mr. 1895.

From the mode of growth the analogies of the organism are thought to be "among some of the lower plants and grasses."

Knoblauch, E. Die Nomenclature der Gattungen und Arten. Bot. Centralb. **61**: 1–6. Ja. 1895.

Lagerheim, G. de. **See Patouillard, W.**

Lemmon, J. G. A new *Calochortus*. Erythea, **3**: 49–50. 1 Mr. 1895.
C. collinus from Central California.

Linsbauer, L. Beiträge zur Vergleichenden Anatomie der Caprifoliaceen. Verh. Zool. Bot. Gesel. Wien, **45**: 43–68. *pl. 6.* 1895.

Meehan, T. *Iris cuprea.* Meehan's Month. **5**: 61–62. *pl. 4.* Ap. 1895.

Miller, A. W., Beringer, G. M., and **Crawford, J.,** Committee. Biographical Sketch of Dr. J. Bernard Brinton. Bull. Torr. Bot. Club, **22**: 93–97. *Portrait.* 27 Mr. 1895.

Müller, J. Graphideae Eckfeldtianae in Louisiana et Florida lectae, additis observationibus in Graphideas Calkinsianas ejusdem regionis. Bull. Herb. Boiss. **3**: 41–50. F. 1895.

Pammel, L. H. Botany of the Russian Thistle. Bull. Iowa Agric. Coll. Exper. Sta. **26**: 8–25. *pl. 8.* 1894.

Pammel, L. H. Further Notes on *Cladosporium carpophilum*. Proc. Iowa Acad. Sci. **1**: 92, 93. 1894.

Pammel, L. H. Powdery Mildew of the Apple. Proc. Iowa Acad. Sci. **1**: 92. 1894.

Patouillard, W. et **Lagerheim, G. de.** Champignons de l'Equateur. Bull. Herb. Boiss. **3**: 53–74. *pl. 2.* F. 1895.
Descriptions of fifty new species.

Robertson, C. Flowers and Insects.—XIII. Bot. Gaz. **20**: 104–110. 16 Mr. 1895.

Robertson, C. The Philosophy of Flower Seasons and the Phaenological Relations of the Entomophilons Flora and the Anthophilous Insect Fauna. Am. Nat. **29**: 97–117. *pl. 8.* F. 1895.

Robinson, B. L. On the "List of Pteridophyta and Spermatophyta of Northeastern America," prepared by the Nomenclature Committee of the Botanical Club. Bot. Gaz. **20**: 97—103. 16 Mr. 1895.

Sargent, C. S., Editor. The Cherokee Rose. Gard. & For. **8**: 114. *f. 18.* 20 Mr. 1895.

Sargent, C. S., Editor. The Winter Aspect of Trees. Gard. & & For. **8**: 121. *f. 19.* Mr. 1895.
With illustration of the Beech-tree.

Schumann, K. *Phyllocactus Thomasianus.* Monats. Kakteenk. **5**: 6. *pl.* 20 Ja. 1895.

Stephani, F. Hepaticarum species novae.—VII. Hedwigia, **34**: 43–48. 15 F. 1895.

New species of *Herberta*, *Hygrobiella*, *Hymenophytum* and *Jamesoniella* including *Herberta dura* from Straits of Magellan, *H. pumila* from Argentina, and *Jamesoniella Leiboldiana* from Mexico.

Stevens, W. C. Apparatus for Physiological Botany. Bot. Gaz. **20**: 89–96. *pl. 9–12.* 16 Mr. 1895.

Terry, W. A. Diatoms of the Connecticut Shore.—VII. Am. Mo. Mic. Journ. **16**: 41–47. 1895.

Underwood, L. M. The Classification of the Archegoniates. Bull. Torr. Bot. Club, **22**: 124–129. 27 Mr. 1895.

Underwood, L. M. The Relation of the Red Cedar to our Orchards. Trans. Indiana Hort. Soc. **1894**: 81–84. 1895.

Popular account of *Gymnosporangium macropus* and *G. globosum.*

Walker, Ernest. How Plants use Spines and Prickles. Trans. Indiana Hort. Soc. **1894**: 86–92. 1895.

Wildeman, E. de. *Trentepohlia Pittieri.* La Notarisia, **9**: 6–7. 1894.

A new species from the leaves of various plants in the forests of Costa Rica.

Wiley, H. W. Sweet Cassava: its Culture, Properties and Uses. Bull. Div. Chemistry, U. S. Dept. Agric. 44: pp. 16. *f. 1. pl. 2.* 1894.

Discussion of *Jatropha Manihot.*

Wilson, J. The Russian Thistle—(*Salsola Kali Tragus*). Bull. Iowa Agric. Ex. Sta. 26: 3–7. 1894.

Wooten, E. D. New Mexico Weeds. Bull. N. Mex. Agric. Exp. Sta. 13: 36. *f. 15.* O. 1894.

Wright, J. S. A Guide to the Organic Drugs of the United States Pharmacopoeia. 12mo., pp. 118. Eli Lilly & Co. 1895.

Gives brief accounts of drugs and the species yielding them, and a conspectus of the natural orders of plants.

Contributions from the Herbarium of Columbia College.

[The numbers omitted from this list are out of print.]

No. 4. A List of Plants Collected by Miss Mary B. Croft at San Diego, Texas. By N. L. Britton and H. H. Rusby (1887), ... 25 cents.

No. 5. New or Noteworthy North American Phanerogams. By N. L. Britton (1888), ... 25 cents.

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No. 9. A List of Plants Collected by Dr. E. A. Mearns at Fort Verde and in the Mogollon and San Francisco Mountains, Arizona, 1884–1888. By N. L. Britton.

The General Floral Characters of the San Francisco and Mogollon Mountains and the Adjacent Region. By H. H. Rusby (1888), ... 25 cents.

No. 11. Preliminary Notes on the North American Species of the Genus *Tissa*, Adans. By N. L. Britton (1889), ... 25 cents.

No. 13. New or Noteworthy North American Phanerogams, II. By N. L. Britton (1889), ... 25 cents.

No. 15. A Descriptive List of Species of the Genus *Heuchera*. By Wm. E. Wheelock (1890), ... 25 cents.

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No. 17. The Flora of the Desert of Atacama. By Thos. Morong (1891), . 25 cents.

No. 20. New or Noteworthy North American Phanerogams, IV. By N. L. Britton. (1891), ... 25 cents.

No. 21. Notes on the North American Species of Eriocauleæ. By Thos. Morong (1891), ... 25 cents.

No. 22. New or Noteworthy North American Phanerogams, V. By N. L. Britton (1891), ... 25 cents.

No. 24. Review of the North American Species of the Genus *Xyris*. By Heinrich Ries (1892), ... 25 cents.

No. 25. A Preliminary List of the Species of the Genus *Meibomia* occurring in the United States and British America. By Anna M. Vail (1892), . 25 cents.

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No. 27. Note on a Collection of Tertiary Fossil Plants from Potosi, Bolivia. By N. L. Britton (1892), ... 25 cents.

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No. 31. A Preliminary List of American Species of *Polygonum*. By John K. Small (1892), ... 25 cents.

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